

WHAT IS CLAIMED IS:

1. An automatic transmission sump filter assembly in fluid communication with the inlet of an automatic transmission fluid pump comprising:

5                   (a) a filter housing having a filter chamber, an inlet in fluid communication with the filter chamber, and an outlet in fluid communication with the filter chamber and the inlet of the automatic transmission fluid pump;

(b) filtration material forming an envelope;

10                  (c) a plastic filter element, removably disposed in the filter chamber, having at least one edge of the filtration material envelope embedded therein and at least one shoulder adapted to receive at least one sealing member; and

15                  (d) at least one sealing member disposed in the filter element shoulder, wherein the sealing member is in sealing engagement with the filter housing and the filter element.

20                  2. The automatic transmission sump filter assembly of claim 1 further comprising at least one plastic rib attached to the plastic filter element and supporting the filtration material.

25                  3. The automatic transmission sump filter assembly of claim 2, wherein the plastic filter element further comprises an end wall member attached to the at least one plastic rib with a portion of the filtration material embedded into the end wall member.

4. The automatic transmission sump filter assembly of claim 3 wherein the sealing member comprises at least one O-ring, and the shoulder is adapted to retain the at least one O-ring.

25                  5. The automatic transmission sump filter assembly of claim 4 wherein at least a portion of the end wall member comprises a sealing member retaining

shoulder adapted to receive at least one sealing member or O-ring and disposed about the periphery of the end wall, and further comprising at least one sealing member or O-ring disposed in the end wall retaining shoulder, wherein the sealing member or O-ring is in sealing engagement with the filter housing and the filter element.

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6. The automatic transmission sump filter assembly of claim 5 wherein the filtration material comprises polyester.

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7. The automatic transmission sump filter assembly of claim 1, wherein the plastic filter element further comprises an end wall member with a portion of the filtration material embedded into the end wall member.

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8. The automatic transmission sump filter assembly of claim 7 wherein the sealing member comprises at least one O-ring, and the retaining shoulder is adapted to receive at least one O-ring..

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9. The automatic transmission sump filter assembly of claim 8 wherein the filtration material comprises polyester.

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10. The automatic transmission sump filter assembly of claim 9 wherein the end wall member comprises a sealing member retaining shoulder adapted to receive at least one sealing member and disposed about the periphery of the end wall, and further comprising at least one sealing member disposed in the end wall retaining shoulder, wherein the sealing member is in sealing engagement with the filter housing and the filter element.

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11. The automatic transmission sump filter assembly of claim 1 wherein the filtration material comprises polyester.

12. The automatic transmission sump filter assembly of claim 11, wherein the plastic filter element further comprises at least one plastic rib and an end wall member attached to the at least one plastic rib with a portion of the filtration material embedded into the end wall member.

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13. The automatic transmission sump filter assembly of claim 12 wherein the sealing member comprises at least one O-ring, and the shoulder is adapted to receive the at least one O-ring.

5           14. The sump filter assembly of claim 13 wherein the end wall member comprises a sealing member retaining shoulder adapted to receive at least one sealing member and disposed about the periphery of the end wall, and further comprising at least one sealing member disposed in the end wall retaining shoulder, wherein the sealing member is in sealing engagement with the filter housing and the filter element..

10           15. A sump filter assembly in fluid communication with the inlet of a pump comprising:

15           (a) a housing having a chamber, an inlet in fluid communication with the chamber, an outlet in fluid communication with the chamber thereby defining a fluid flow path between the inlet and outlet through the chamber, and an access hole; and

(b) a filter element disposed through the housing access hole, the filter element comprising:

(i) a plastic member having a frame and at least one sealing member retaining shoulder,

20           (ii) filtration material, with a portion of the filtration material embedded in the plastic frame,

(iii) at least one plastic rib attached to the plastic member and supporting the filtration material, and

25           (iv) at least one sealing member disposed against the sealing member retaining shoulder and sealingly engaging the housing wall in the housing

chamber, whereby the filter element is disposed in the fluid flow path between the housing inlet and outlet to thereby filter sump fluid.

16. The sump filter assembly of claim 15 wherein a portion of the filtration material is embedded into at least one plastic rib.

5           17. The sump filter assembly of claim 16 wherein the sealing member comprises at least one O-ring, and the shoulder is adapted to receive the at least one O-ring.

10           18. The sump filter assembly of claim 17, wherein the filter element further comprises an end wall member attached to at least one plastic rib integral with the plastic member, whereby the plastic end wall member extends through the housing access hole.

15           19. The sump filter assembly of claim 18 wherein a portion of the filtration material is embedded into the end wall member.

15           20. The sump filter assembly of claim 19 wherein the plastic member, the end wall member, and at least one plastic rib are monolithically molded.

21. The sump filter assembly of claim 20, further comprising a plurality of plastic ribs extending between the plastic member and the end wall member, whereby a rib cage support structure for filtration material is formed.

20           22. The sump filter assembly of claim 21 wherein the filtration material comprises polyester.

25           23. The sump filter assembly of claim 22 wherein the end wall member further comprises a sealing member retaining shoulder adapted to receive at least one sealing member and disposed about the periphery of the end wall, and further comprising at least one sealing member disposed in the end wall retaining shoulder, wherein the sealing member is in sealing engagement with the filter housing and the filter element..

24. The sump filter assembly of claim 23 wherein at least one sealing member is at least one gasket member.

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25. The sump filter assembly of claim 15, wherein the filter element is accessible from the housing access hole, removably disposed in the housing, and the filter element further comprises an end wall member attached to the at least one plastic rib with a portion of the filtration material embedded into the end wall member.

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26. The sump filter assembly of claim 25 wherein a portion of the filtration material is embedded into at least one plastic rib, and the plastic member, at least one plastic rib, and the end wall member are monolithically molded plastic.

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27. The sump filter assembly of claim 26 wherein the end wall member comprises a sealing member retaining shoulder adapted to receive at least one sealing member and disposed about the periphery of the end wall, and further comprising at least one sealing member disposed in the end wall sealing member retaining shoulder, wherein the sealing member is in sealing engagement with the filter housing and the filter element.

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28. The sump filter assembly of claim 27 wherein the filtration material comprises polyester.

29. The sump filter assembly of claim 28 wherein at least one sealing member comprises at least one O-ring.

30. The sump filter assembly of claim 15 wherein the at least one sealing member comprises at least one O-ring or at least one gasket member.

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31. The sump filter assembly of claim 30, wherein the filter element is sonically welded to the housing access hole perimeter and the filter element further comprises an end wall member attached to the at least one plastic rib with a portion of the filtration material embedded into the end wall member.

32. The sump filter assembly of claim 31 wherein a portion of the filtration material is embedded into at least one plastic rib, and the plastic member, at least one plastic rib, and the end wall member are monolithically molded plastic.

5           33. The sump filter assembly of claim 32 wherein the filtration material comprises polyester.

34. The sump filter assembly of claim 32 wherein the filtration material comprises nylon, stainless steel, or cellulose.

10          35. The sump filter assembly of claim 15 wherein the filtration material comprises polyester, nylon, stainless steel or cellulose.

15          36. The sump filter assembly of claim 35 wherein the at least one sealing member comprises at least one O-ring.

15          37. The sump filter assembly of claim 36, wherein the filter element further comprises an end wall member attached to the at least one plastic rib with a portion of the filtration material embedded into the end wall member.

15          38. The sump filter assembly of claim 37 wherein a portion of the filtration material is embedded into at least one plastic rib, and the plastic member, at least one plastic rib, and the end wall member are monolithically molded plastic.

20          39. The sump filter assembly of claim 38 wherein the end wall member comprises an O-ring retaining shoulder adapted to receive at least one O-ring and disposed about the periphery of the end wall, and further comprising at least one O-ring disposed in the end wall O-ring retaining shoulder, wherein the O-ring is in sealing engagement with the filter housing and the filter element.

25          40. The sump filter assembly of claim 15 wherein the housing is a monolithic housing.